

Application No. 10/089,578

Filed: August 12, 2002

TC Art Unit: 1754

Confirmation No.: 2516

AMENDMENT TO THE CLAIMS

1. (Currently Amended) Process for the catalytic reduction of sulphur dioxide ~~from content of~~ a gas mixture at least containing 10 vol.% of water, in which process the gas mixture is passed over a sulphur resistant hydrogenation catalyst in sulphidic form, at a space velocity of at least  $2000 \text{ h}^{-1}$ , in the presence of a reducing component, ~~preferably at least partly consisting of hydrogen,~~ in a molar ratio of reducing component to sulphur dioxide of more than 10 up to 100, at a temperature of  $125^{\circ}\text{C}$  to  $300^{\circ}\text{C}$ , followed by passing the gas mixture, after the said reduction, through a dry oxidation bed for the oxidation of sulphur compounds, ~~more in particular hydrogen sulphide,~~ to elemental sulphur.

2. (Original) Process according to claim 1, wherein the catalyst is supported on a carrier material having substantially no activity towards the Claus reaction and having at least one sulphidic hydrogenation component applied to the surface of said carrier material.

3. (Currently Amended) Process according to claim 2, wherein the said hydrogenation component is selected from the group consisting of metals of Groups VIB, VIIB and VIII of the periodic table of elements Cr, Mo, W, Mn, Te, Re, Fe, Co, Ni, Ru, Rh, Pd, Os, Ir and Pt.

4. (Original) Process according to claim 3, wherein the hydrogenation component is based on molybdenum, and/or tungsten and/or cobalt.

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5. (Original) Process according to claim 4, wherein the hydrogenation component is a catalyst based molybdenum or tungsten on a silica support, preferably containing 0.1 to 50 wt.% of molybdenum or tungsten.

6. (Currently Amended) Process according to claims 2, wherein the carrier material is selected from the group consisting of silica,  $\alpha$ -alumina, silica alumina, zirconia, carbon (fibres), carbides, phosphates and ~~(such as aluminium phosphate)~~.

7. (Currently Amended) Process according to claims 1, wherein ~~the said space velocity is less than 12000 h<sup>-1</sup>, preferably less than 10000 h<sup>-1</sup>.~~

8. (Previously Presented) Process for the removal of sulphur contaminants from gas mixtures, said process comprising the steps of

converting part of the hydrogen sulphide into sulphur dioxide,

subjecting the mixture to the Claus reaction in at least one catalytic reactor,

subjecting the sulphur dioxide present in resultant gas mixture to a removal step using the process of claim 1,

selectively oxidising the hydrogen sulphide present in the resulting gas mixture to elemental sulphur.

9. (Previously Presented) Process according to claim 8, wherein the said step of selectively oxidising is carried out in a dry oxidation bed.

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10. (Currently Amended) Process according to claim 3, wherein the carrier material is selected from the group consisting of silica,  $\alpha$ -alumina, silica alumina, zirconia, carbon (fibres), carbides, phosphates and ~~(such as aluminium phosphate)~~.

11. (Currently Amended) Process according to claim 4, wherein the carrier material is selected from the group consisting of silica,  $\alpha$ -alumina, silica alumina, zirconia, carbon (fibres), carbides, phosphates and ~~(such as aluminium phosphate)~~.

12. (Currently Amended) Process according to claim 5, wherein the carrier material is selected from the group consisting of silica,  $\alpha$ -alumina, silica alumina, zirconia, carbon (fibres), carbides, phosphates and ~~(such as aluminium phosphate)~~.

13. (Currently Amended) Process according to claim 2, wherein ~~the~~ said space velocity is less than  $12000 \text{ h}^{-1}$ , ~~preferably less than~~  ~~$10000 \text{ h}^{-1}$~~ .

14. (Currently Amended) Process according to claim 3, wherein ~~the~~ said space velocity is less than  $12000 \text{ h}^{-1}$ , ~~preferably less than~~  ~~$10000 \text{ h}^{-1}$~~ .

15. (Currently Amended) Process according to claim 4, wherein ~~the~~ said space velocity is less than  $12000 \text{ h}^{-1}$ , ~~preferably less than~~  ~~$10000 \text{ h}^{-1}$~~ .

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16. (Currently Amended) Process according to claim 5, wherein the said space velocity is less than  $12000 \text{ h}^{-1}$ , ~~preferably less than  $10000 \text{ h}^{-1}$ .~~

17. (Currently Amended) Process according to claim 6, wherein the said space velocity is less than  $12000 \text{ h}^{-1}$ , ~~preferably less than  $10000 \text{ h}^{-1}$ .~~

18. (Previously Presented) Process for the removal of sulphur contaminants from gas mixtures, said process comprising the steps of

converting part of the hydrogen sulphide into sulphur dioxide,

subjecting the mixture to the Claus reaction in at least one catalytic reactor,

subjecting the sulphur dioxide present in resultant gas mixture to a removal step using the process of claim 2.

19. (Previously Presented) Process for the removal of sulphur contaminants from gas mixtures, said process comprising the steps of

converting part of the hydrogen sulphide into sulphur dioxide,

subjecting the mixture to the Claus reaction in at least one catalytic reactor,

subjecting the sulphur dioxide present in resultant gas mixture to a removal step using the process of claim 3.

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20. (Previously Presented) Process for the removal of sulphur contaminants from gas mixtures, said process comprising the steps of

converting part of the hydrogen sulphide into sulphur dioxide,

subjecting the mixture to the Claus reaction in at least one catalytic reactor,

subjecting the sulphur dioxide present in resultant gas mixture to a removal step using the process of claim 4.

21. (Previously Presented) Process for the removal of sulphur contaminants from gas mixtures, said process comprising the steps of

converting part of the hydrogen sulphide into sulphur dioxide,

subjecting the mixture to the Claus reaction in at least one catalytic reactor,

subjecting the sulphur dioxide present in resultant gas mixture to a removal step using the process of claim 5.

22. (Previously Presented) Process for the removal of sulphur contaminants from gas mixtures, said process comprising the steps of

converting part of the hydrogen sulphide into sulphur dioxide,

subjecting the mixture to the Claus reaction in at least one catalytic reactor,

subjecting the sulphur dioxide present in resultant gas mixture to a removal step using the process of claim 6.

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23. (Previously Presented) Process for the removal of sulphur contaminants from gas mixtures, said process comprising the steps of

converting part of the hydrogen sulphide into sulphur dioxide,

subjecting the mixture to the Claus reaction in at least one catalytic reactor,

subjecting the sulphur dioxide present in resultant gas mixture to a removal step using the process of claim 7.

24. (Currently Amended) Process according to claim 12, wherein the said space velocity is less than  $12000 \text{ h}^{-1}$ , ~~preferably less than  $10000 \text{ h}^{-1}$ .~~

25. (Previously Presented) Process for the removal of sulphur contaminants from gas mixtures, said process comprising the steps of

converting part of the hydrogen sulphide into sulphur dioxide,

subjecting the mixture to the Claus reaction in at least one catalytic reactor,

subjecting the sulphur dioxide present in resultant gas mixture to a removal step using the process of claim 24.

26. (New) Process according to claim 1, wherein the  $\text{SO}_2$  in the gas mixture is reduced over sulphur vapour in the gas mixture.

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27. (New) Process according to claim 1, wherein said reducing component is at least partly consisting of hydrogen.

28. (New) Process according to claim 1, wherein said space velocity is less than  $10000 \text{ h}^{-1}$ .

29. (New) Process according to claim 2, wherein said space velocity is less than  $10000 \text{ h}^{-1}$ .

30. (New) Process according to claim 3, wherein said space velocity is less than  $10000 \text{ h}^{-1}$ .

31. (New) Process according to claim 4, wherein said space velocity is less than  $10000 \text{ h}^{-1}$ .

32. (New) Process according to claim 5, wherein said space velocity is less than  $10000 \text{ h}^{-1}$ .

33. (New) Process according to claim 6, wherein said space velocity is less than  $10000 \text{ h}^{-1}$ .

34. (New) Process according to claim 12, wherein said space velocity is less than  $10000 \text{ h}^{-1}$ .